permits some questions to be posed concerning the possible genetic role of DNA in these materials and others. That DNA may have a special role in determining specific genetic phenomena in general resides at present on the following evidence: (*a*) the transformation phenomenon in Pneumoccocus and possibly other microorganisms (2) and (*b*) the apparent correlation of DNA content and chromosome number in haploid and diploid cells (3). Among the bacterial viruses, the following data suggest an important genetic role for DNA: (*c*) the multiplication of units capable of going on to become virus begins approximately with the beginning of DNA synthesis in virus-infected cells (4), (*d*) the time course of DNA synthesis parallels and precedes complete virus synthesis by several minutes (5), (*e*) the period in which virus mutation is possible within the infected cell appears to correspond to the period of nucleoprotein synthesis (6), (*f*) the amount of DNA synthesis is apparently proportional to the amount of virus produced (7), and (*g*) an ultraviolet-inactivated phage particle inhibits DNA synthesis (8).

Luria has proposed the existence of discrete ultraviolet-sensitive and transferable genetic units in viruses T2, T4, and T6. If DNA is indeed a component of such a discrete genetic unit, it might be anticipated that the DNA content of a particle of one of these viruses might be proportional to the number of genetic units in the virus.

Several considerations make the DNA content of a virus particle difficult to assess accurately, the most important of these being the presence within a preparation of phage of large numbers of inactive particles. In our own studies and those of others it has been observed for instance, that a differential centrifugation cycle reduces the activity per unit mass and thus the DNA content per unit activity may vary within wide limits. T2 preparations appear particularly sensitive in this respect. It has therefore appeared advisable to consider the DNA content of the most active preparation described. In Table I are presented data on the DNA content per virus particle for the most active preparations of T2, T4, or T6 yet described. It is seen that T2 and T6 preparations of r and r^+ appear similar and significantly different from $T4r^+$ and r. It is of interest to note that these values are similar to that of the DNA content of the elementary bodies of vaccinia, estimated to be about 3.2×10^{-16} gm. DNA per elementary body, although much greater than that of many other viruses and much less than that of a bull sperm (3.3×10^{-12} gm. DNA) or that of a bacterial nucleus (10^{-14} to 10^{-15} gm. DNA).

When the bacterial virus figures are divided throughout by Luria's estimate of the number of genetic units in each of the T strains analyzed, the DNA content per genetic unit among all six viruses proves similar, *i.e.*, 0.11 to 0.16×10^{-15} gm. DNA per hypothetical genetic unit. These values for a genetic unit now approach the nucleic acid content of some other viruses more closely, (*e.g.*, the DNA content of a particle of rabbit papilloma or influenza virus is